

REMARKS

The Office Action of August 19, 2009 has been received and its contents carefully considered. An RCE is being filed concurrently to permit further prosecution.

The present Amendment revises the independent claims to further distinguish the invention from the cited references, as will be discussed in more detail below. In particular, most of the independent claims now provide that units of watermark information are diffused using at least one PN code (independent claim 5 is similar, but refers to two-dimensional PN codes). The independent claims now also include language specifying what is meant by the term “diffused.” For example, independent claim 2 now recites that a watermark image generation section “diffuses each bit of watermark information by representing the respective bit by the at least one PN code if the respective bit has a first value and by representing the respective bit by a modified version of the at least one PN code if the respective bit has a second value.” This is supported by the description of the second embodiment disclosed in the application and the associated drawings (particularly Figure 26).

The present Amendment also cancels two dependent claims as being redundant in view of revisions that have been made to the independent claims.

In addition, the present Amendment responds to the objection to claim 4 (see section 7 of the Office Action) by inserting a word that was inadvertently missing previously. As for claim 5, it is not clear how it fails to conform to proper English standards, so this ground of rejection is respectfully traversed. The typographical error noted in section 8 of the Office Action has also been corrected. In view of these considerations, the claim objections should be withdrawn.

Section 10 of the Office Action rejects all of the claims for anticipation by a published US application by Suzaki in view of a published US application by Tewfik et al (which will hereafter be called simply “Tewfik” for the sake of convenient discussion). For the reasons discussed below, it is respectfully submitted that the inventions now defined by the independent claims are patentable over these references.

The Suzuki reference discloses the use of dot patterns for embedding watermark information. Tewfik discloses the use of PN codes to provide a unique signature, or spreading hidden data using a PN code.

As was noted previously, independent claim 2 now provides that units of watermark information are diffused using at least one PN code, and that this diffusion is such that each bit of the watermark information is represented by the at least one PN code or a modified version of it. The Suzuki reference says nothing about PN codes. As for Tewfik, PN codes are only used for generating the watermark information. It is respectfully submitted that Tewfik would not have motivated an ordinarily skilled person to modify Suzuki so as to represent bits of watermark information using at least one PN code and a modified version thereof. Diffusing watermark information using PN codes makes it possible to increase the precision of detecting the watermark information by correlation with the PN codes, so that the watermark information can be recovered even if the watermarked document has blemished such as folds or tears.

Accordingly, the rejection of claim 2 should be withdrawn. The remaining independent claims also specify diffusing units of watermark information using at least one PN code, with each bit of watermark information being represented by the at least one PN code or a modified version thereof (the exception being independent claim 5, where units of watermark information are diffused using two-dimensional PN codes). For reasons along the lines discussed above with respect to claim 2, it is respectfully submitted that the remaining dependent claims are also patentable over Suzuki and Tewfik.

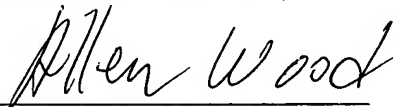
The dependent claims add additional limitations to further define the invention of their independent claims. Accordingly, their automatically patentable along with their independent claims. Nevertheless, two of the dependent claims will now be briefly addressed.

Claim 22 recites that “the at least one PN code includes a particular PN code and the modified version of the at least one PN code has bits that are inverted from the bits of the particular PN code.” Claim 24 is the same, but depends from a different independent claim. Page 15 of the Office Action asserts that this is disclosed by Suzuki. Applicant respectfully disagrees. The Office Action comments that a particular passage at column 3 of the reference teaches the use of multiple PN codes, but there is nothing in this passage

to suggest the use of multiple PN codes with respect to a single watermarked document. The reference also comments that Tewfik teaches using discrete cosine transforms and inverse transforms to embed and detect watermarks. But an ordinarily skilled person would have had no reason to mentally link transforms and inverse transforms with PN codes and PN codes with inverted bits. The Office Action concludes that it would have been obvious to use an inverse PN code barring any unexpected results. The test for obviousness, though, is not "unexpected results" (except in chemical-type cases where ranges overlap), but rather what would have been obvious to an ordinarily skilled person.

For the foregoing reasons, it is respectfully submitted that this application is now in condition for allowance. Reconsideration of the application is therefore respectfully requested.

Respectfully submitted,



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